

Your grade: 90%

Your latest: 90% • Your highest: 90% • To pass you need at least 80%. We keep your highest score.

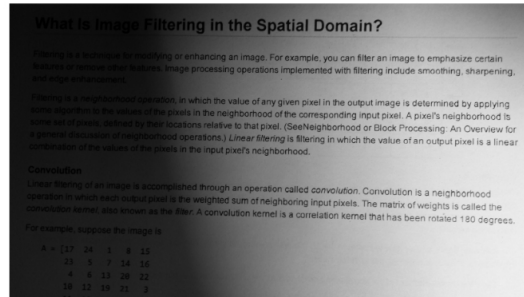
Next item →

1. For the questions in this quiz, you will be loading images into the Image Segmenter App. In each case, when prompted to "Adjust Image?", you need to click "Yes" to get the correct results.

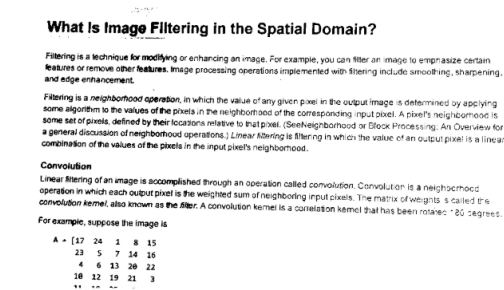
1 / 1 point

Use the following code to load and view an image of text data included with your version of MATLAB. Notice the illumination is very uneven.

```
1 textImage = imread("printedtext.png");  
2 imshow(textImage)
```



Using the Image Segmenter App, which approach below gives you the following segmented image?



- ☐ Manual threshold with a Threshold value of 60
- ☐ Adaptive threshold with a bright foreground polarity and a Sensitivity value of 50
- ☐ Manual Threshold with a value of of 200
- ☐ Global Threshold
- ☒ Adaptive Threshold with a bright Foreground Polarity and a Sensitivity value of 90

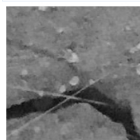
✔ Correct

An adaptive threshold is required due to the uneven illumination. A Sensitivity value of 90 works well to separate out the text from the background.

2. Use the following code to load, convert to grayscale, and view an image of a crack included with your course files.

1 / 1 point

```
1 crackImage = imread("00162.jpg");  
2 crackImage = im2gray(crackImage);  
3 imshow(crackImage)
```



Which approach or approaches below will produce the following mask (select all approaches that work)?



- ☒ 1. Global Threshold

2. Invert mask
3. Close mask with a disk of radius 3
4. Open mask with a disk of radius 3

✔ Correct  
Correct!

This is one of the two correct sets of steps here.

- ☒ 1. Global Threshold
2. Invert Mask
  3. Close mask with a disk of radius 3
  4. Erode mask with a disk of radius 3
  5. Dilate mask with a disk of radius 3

✔ Correct  
Correct!

Notice, erosion followed by dilation with the same structuring element is equivalent to opening.

This is one of the two correct sets of steps here.

- ☐ 1. Adaptive Threshold with bright Foreground Polarity and a sensitivity of 90
2. Erode mask with a disk of radius 4
  3. Fill holes
  4. Invert mask
- ☐ 1. Manual Threshold with a value of 57
2. Invert mask
  3. Close mask with a disk of radius 3

3. Use the following code to load and view an image of coins included with MATLAB.

0.5 / 1 point

```
1 coinImage = imread("coins.png");
2 imshow(coinImage)
```



Next, open the Image Segmenter app, load the image from the workspace, and choose "Yes" when prompted for contrast adjustment.

Which approach or approaches below will segment the coins as foreground with no holes, negligible missing foreground, and no extra foreground artifacts:



- ☐ Manual Threshold with a Threshold value of 64.
- ☒ Auto Cluster, then Fill Holes

✔ Correct  
Correct!

This is one of the two correct approaches here.

- ☒ Find Circles with the following settings:
- Min. Diameter: 50
  - Max. Diameter: 150
  - Number of Circles: Inf
  - Background Polarity: bright

- Foreground Polarity: bright
- Sensitivity: 0.85



**This should not be selected**

Here you should see that these settings will find most of the coins but miss a couple of them. Notice they're both some of the smaller coins. Use the Ruler tool in the upper left to see how much to adjust your settings.

☐ Find Circles with the following settings:

- Min. Diameter: 30
- Max. Diameter: 150
- Number of Circles: Inf
- Foreground Polarity: bright
- Sensitivity: 0.90

4. Now assume you want to segment *only* the nickels (the larger of the two types of coin in this image). Can you find one or more ways that work?

1 / 1 point

☐ Auto Cluster, then Fill Holes

☒ Use Find Circles to find all the circles. Then use the "open" morphological operator with a disk shape and radius of 26.



**Correct**

Correct. Choosing a structuring element that is large enough to cover the small coins but not the large coins will remove the small coins from the mask.

☐ Choose a manual threshold of 175 to differentiate between the two types of coins.

☒ Use the Find circles approach with a minimum diameter of 55 pixels.



**Correct**

Correct. All off the smaller coins are below this threshold and will not be included in the mask.

5. To apply an approach developed in the Image Segmenter app on other images, the best practice is to:

1 / 1 point

- ☐ Write down the steps you took. Load other images into the app and repeat the steps.
- ☐ The Image Segmenter App is meant for manual segmentation. You cannot repeat the process on other images.
- ☒ Generate a function from the app and apply the function to your other images.
- ☐ Load an entire folder of images into the Image Segmenter App to apply the steps to all images at once.



**Correct**